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M E M O R A N D U M

DATE: 08/21/00

TO: POWTS Plan Reviewers
Wastewater Specialists
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Interested Parties

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SUBJECT: Procedures for Evaluating Non-Uniform Soil Horizons
s. Comm 83.44(4)(b), Wis. Adm. Code

The new chapter Comm 83, Wis. Adm. Code, generally recognizes three feet of unsaturated soil as adequate for the absorptive treatment of septic tank effluent containing greater than 10^4 CFU/100ml fecal coliform, and two feet as adequate for treating influents of less than 10^4 CFU/100ml fecal coliform. However, soil materials dominated by coarse sand and/or containing a large proportion of rock fragments larger than 2mm are recognized as having a diminished capacity to treat wastewater compared to soils composed of finer textured materials. To compensate for this lesser treatment capacity, Table 83.44-3 requires greater depths of these coarser materials to achieve the same treatment as the finer textured soils.

Many coarse soils are not uniformly composed of the same material, but are made up of horizons, strata, or layers of materials having different textures and rock fragment content. Table 83.44-3 cannot be directly applied to a stratified soil column, but its basic means of establishing a minimum depth of unsaturated soil required for effective treatment can be applied to each described layer. This is done by deriving a depth compensation factor from Table 83.44-3 for each described soil texture and applying it to the measured thickness of the individual layers in a stratified soil column. The compensation factors that are applied to the various coarse soil materials to determine the thickness for treatment equivalent to non-coarse soil are presented in a chart on page 2.

Soil Texture	Multiply Layer Thickness By	To Get Equivalent Non-Coarse Soil Thickness [1] For:
Very Coarse Sand or Coarser [2]	0.30	Influents >10^4 CFU/100ml fecal coliform
	0.40	Influents <10^4 CFU/100ml fecal coliform
Coarse Sand & Loamy Coarse Sand w/<35% ca. frags.	0.60	Influents >10^4 CFU/100ml fecal coliform
	0.67	Influents <10^4 CFU/100ml fecal coliform
Coarse Sand & Loamy Coarse Sand w/>35% to <60% ca. frags.	0.30	Influents >10^4 CFU/100ml fecal coliform
	0.40	Influents <10^4 CFU/100ml fecal coliform
Sand	1.00	Influents >10^4 CFU/100ml fecal coliform
	1.00	Influents <10^4 CFU/100ml fecal coliform
Sand w/>35% to <60% ca. frags.	0.30	Influents >10^4 CFU/100ml fecal coliform
	0.40	Influents <10^4 CFU/100ml fecal coliform

1/ Determine total equivalency by adding up the equivalent thickness for the various coarse layers in the profile. The minimum standard is 36" for influent >10^4 CFU/100ml fecal coliform and 24" for influent <10^4 CFU/100ml fecal coliform.
2/ Coarse sand soil texture dominated by particles between 1.0 and 2.0 mm.

Example: 27" Very Coarse Sand X 0.30 = 8.1" of equivalent thickness for influent >10^4 CFU/100ml fecal coliform, or 27" Very Coarse Sand X 0.40 = 10.8" of equivalent thickness for influent <10^4 CFU/100ml fecal coliform.

If you have any questions, please feel free to contact any wastewater specialist. Thanks!